Civil liability and the 50%+ standard of proof

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Abstract

The standard of proof applied in civil trials is the *preponderance of evidence*, often said to be met when a proposition is shown to be more than 50% likely to be true. A number of theorists have argued that this 50%+ standard is too weak—there are circumstances in which a court should find that the defendant is not liable, even though the evidence presented makes it more than 50% likely that the plaintiff's claim is true. In this paper, I will recapitulate the familiar arguments for this thesis, before defending a more radical one: The 50%+ standard is also too *strong*—there are circumstances in which a court should find that a defendant *is* liable, even though the evidence presented makes it *less* than 50% likely that the plaintiff's claim is true. I will argue that the latter thesis follows naturally from the former once we accept that the parties in a civil trial are to be treated *equally*. I will conclude by sketching an alternative interpretation of the civil standard of proof

Keywords

base rate fallacy, burden of proof, civil liability, naked statistical evidence, normic support, preponderance of evidence, principle of equality, probability, relative plausibility

The 50%+ standard is too weak

'Fairness' in a criminal trial is usually associated with the granting of various protections to the defendant—the presumption of innocence, the beyond reasonable doubt standard of proof etc. In a civil trial, on the other hand, 'fairness' is usually thought to involve treating the plaintiff and defendant *equally*, and ensuring that neither enjoys any special advantage over the other (see for instance Allen, 2014: section I; Brook, 1985: section II; Clermont and Sherwin, 2002: section D; Hazelhorst, 2017: ch. 4; Redmayne, 2006: section I; Winter, 1971). As a result, civil trials in common law jurisdictions are decided according to the *preponderance of evidence* standard—the fact finder should side with

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whichever party is able to produce the stronger, more persuasive body of evidence in their favour.[1] In a tort trial, the plaintiff will typically allege that they have suffered certain harms as a direct result of the defendant's negligence. If the evidence in favour of this claim is stronger than the evidence against it, then the court should find for the plaintiff. If the evidence against this claim is stronger than the evidence in its favour, then the court should find for the defendant. The one wrinkle here is that the court should also find for the defendant in the event that the evidence for and against the plaintiff's claim is deemed to be equally strong—a tolerated violation of the equality between plaintiff and defendant which we will return to.

This set-up is often interpreted probabilistically: If the probability of the plaintiff's claim, given the total evidence, is greater than 50%, the court should find for the plaintiff. If the probability of the plaintiff's claim, given the total evidence, is 50% or less, the court should find for the defendant.[2] This interpretation of the civil standard of proof is widely accepted—and is treated as standard in textbooks on evidence law (see for instance, Broun et al., 1984: §339; Dennis, 2002: ch. 11, section F; Elliott and Phipson, 1987: ch. 4, section B; Keane, 1996: ch. 3, section B**;** O'Malley et al., 2006: §104.01). It is also found in case law, statutes and model jury instructions. Some examples (selected on no particular basis) . . . In *Miller* v *Minister of Pensions* ([1947] 2 All ER 372 at 374), Lord Denning explained the civil standard for English law by saying: 'If the evidence is such that the tribunal can say "we think it more probable than not" the burden is discharged, but if the probabilities are equal it is not." Article 140 of the Evidence Act (Cth and NSW) (1995) set out the Australian civil standard as follows: 'In a civil proceeding, the court must find the case of a party proved if it is satisfied that the case has been proved on the balance of probabilities'. According to section 104.01 of the Federal Jury Practice and Instructions for the US Federal Court System,

> 'Establish by a preponderance of the evidence' means evidence which, as a whole, shows that the fact sought to be proved is more probable than not. In other words, a preponderance of the evidence means such evidence as, when considered and compared to the evidence opposed to it, has more convincing force, and produces in your mind's belief that what is sought to be proved is more likely true than not true. (O'Malley et al., 2006, §104.01)[3]

1. The use of the preponderance of evidence standard for civil trials is not universal. In civil or Roman law jurisdictions, for instance, a higher standard of proof for civil trials is generally demanded, with some jurisdictions recognizing no official distinction between the civil and criminal standards (see for instance Clermont and Sherwin, 2002). A comparison between civil standards of proof in common law and Roman law traditions is beyond the scope of this paper, but I will briefly return to this issue in n. 12.
2. In most Commonwealth countries, only two legal standards of proof are officially recognized—the preponderance of evidence standard for civil trials and the beyond reasonable doubt standard for criminal trials (see for instance, Gabriel, 2013; *Rejfek* v *McElroy* 112 CLR 517 [1965]; *Re B (Children)* [2008] UKHL 35). In the United States, however, there are further standards of proof that are given official legal status; the 'probable cause' standard is taken to be weaker than preponderance of evidence, while the 'clear and convincing evidence' standard—used in some civil trials—is taken to be intermediate in strength between preponderance of evidence and beyond reasonable doubt (see Broun et al., 1984: §340 and, for instance, *Cruzan* v *Director of Mississippi Department of Health* 497 US 261 [1990]). In a civil case decided according to the higher clear and convincing evidence standard, the plaintiff, much like the prosecution in a criminal trial, is required to offer much stronger evidence than the defendant in order to prevail. The probabilistic interpretation of the preponderance of evidence standard can be presented as part of a broader picture on which all legal standards of proof correspond to particular probability thresholds (such a picture is set out, though not endorsed, in Laudan, 2006: 56 and Gardiner, 2018: section I; see also Schwartz and Sober, 2017: 623; *United States* v *Fatico* 458 F.Supp 388 [1978] at 403). This undeniably makes for a simple and cohesive overall interpretation—and one on which it is easy to ensure that the various standards satisfy the required relations of comparative strength.
3. In their survey of pattern civil jury instructions across US jurisdictions, Schwartz and Sober found that the civil standard of proof was explained in terms of a 50% probability threshold—using phrases such as 'more probable than not'—in 21 of the 47 jurisdictions surveyed. In 17 jurisdictions, the standard was described using the more neutral terms 'preponderance of the evidence' or 'greater weight of evidence'. In the remaining nine jurisdictions, the pattern instructions included both characterizations, or were otherwise deemed 'ambiguous' (see Schwartz and, Sober 2017: n. 86).

The interpretation of the civil standard of proof in terms of a 50%+ probability has an obvious appeal. If we reject this interpretation, it is unclear (at least at first) how else the phrase 'preponderance of evidence' could possibly be understood. Furthermore, if we reject this interpretation, it is difficult to see how the equal treatment of plaintiff and defendant could possibly be assured—any other standard would seem to favour one or other of the parties. Nevertheless, this interpretation of the civil standard of proof faces a number of familiar difficulties, particularly when it comes to cases of 'naked statistical evidence'.

Suppose there are two bus companies that operate in a town—the Blue-Bus company and the Red-Bus company—and it is known that every bus in the town belongs to one or other company. Suppose a bus one day damages property on a street, and a civil action is brought against the Blue-Bus company. While there were no witnesses to the incident or CCTV footage or anything of the kind, the action is brought against the Blue-Bus company on the grounds that 55% of the buses in the town are Blue-Bus buses, while 45% are Red-Bus buses. It is clear that this evidence *does* make it more than 50% likely that the bus involved was a Blue-Bus bus—given this evidence, we would sooner bet on the bus being a Blue-Bus bus than a Red-Bus bus. Although the plaintiff has succeeded in making her claim more than 50% likely, most agree that it would be unjust for the Blue-Bus company to be held liable on this basis (Allensworth, 2009; Enoch et al., 2012; Kaye, 1982; Redmayne, 2008; Stein, 2005, ch. 3; Thomson, 1986). This example is inspired by a genuine, unsuccessful, civil action.[4]

What this case, and others like it, appear to show is that the 50%+ standard is too *weak*—there are circumstances in which a court should find for the defendant, even though the evidence presented makes the plaintiff's claim more than 50% likely to be true. One obvious way to strengthen the standard would be to raise the probabilistic threshold to something higher than 50%—but this faces immediate problems. Not only would this proposal imperil the idea that plaintiff and defendant are being treated equally, it could be undone by a simple modification of the case—for our reluctance to find the Blue-Bus company liable appears to persist even if we imagine the proportion of Blue-Bus buses to be higher, and the plaintiff's evidence to be, accordingly, stronger. Even if it turns out that *95*% of the buses in the town are Blue-Bus buses and only 5% are Red-Bus buses, it still seems as though the Blue-Bus company should not be held liable. This evidence makes it 95% likely that the bus involved in the incident was a Blue-Bus bus—and presumably we would not want to consider a probabilistic threshold any higher than this. Our reluctance, in this case, to base a pro-plaintiff decision upon the statistical evidence seems to have something to do with its *nature*, and not its probabilistic strength.

Imagine now that, instead of the statistical evidence against the Blue-Bus company, the plaintiff produces evidence of a more conventional sort—suppose she finds an eyewitness who is willing to identify the bus as a Blue-Bus bus. Provided the company has no further evidence to offer, the plaintiff should win the case and the Blue-Bus company should be found liable. But such testimony obviously doesn't guarantee that the bus involved was a Blue-Bus bus—perhaps the eyewitness suffered a colour hallucination, perhaps his memory of the incident was distorted by subsequent misinformation, perhaps he is simply lying in order to smear the company etc. Arguably, the testimony wouldn't make it as likely as *95*% that the bus involved was a Blue-Bus bus—telling against any 95%+ interpretation of the civil standard. In general, if we are prepared to find the Blue-Bus company liable on the basis of testimonial evidence, but not prepared to find the Blue-Bus company liable on the basis of statistical evidence *even when it is probabilistically stronger*, then no interpretation of the civil standard in terms of a probability threshold could possibly be squared with our judgments.[5]

4. *Smith* v *Rapid Transit Inc.* 317 Mass. 469, 58 N.E 2d 754 [1945]. People's reactions to cases of this kind were put to the test by Wells (1992) who found that an overwhelming majority of subjects, in a mock jury situation, were unwilling to find a defendant liable on the basis of naked statistical evidence.

5. In the case being imagined, it is accepted by both parties that the plaintiff's property was damaged, that it was damaged by a bus, that the driver was negligent etc. and, as a result, the question of whether or not the Blue-Bus company should be held liable hinges on the single issue of whether the bus was a Blue-Bus bus or a Red-Bus bus. In a typical civil trial, however, there may be

One may question, at this point, whether there is *any* interpretation of the civil standard of proof that can make sense of our judgments regarding statistical evidence. While there are several interpretations in the literature that attempt to accommodate such judgments (see for instance Cheng, 2013; Enoch et al., 2012; Gardiner, 2018; Smith, 2018; Stein, 2005, ch. 3; Thomson, 1986) my initial concern here is with another issue that has received somewhat less attention; are our judgments about statistical evidence compatible with the idea that the plaintiff and defendant in a civil trial are to be treated *equally*? That our judgments pose some threat to this idea is easy to appreciate. In the original Blue-Bus case, the plaintiff produces evidence that supports her claim that the bus involved was a Blue-Bus bus, while the defendant fails to produce any evidence against it. To find in favour of the defendant nonetheless would seem to amount to preferential treatment. In the next two sections I will argue that a pro-defendant decision in this case is in fact compatible with the equal treatment of both parties, but only on the condition that we are prepared to make a pro-plaintiff decision when the roles are reversed, and it is the defendant who relies upon 'naked statistical evidence'. As I shall demonstrate, this obliges a more radical departure from the 50%+ standard.

Shifting the burden of proof

I have noted one significant way in which the plaintiff and defendant in a civil trial are not on an equal footing: If the evidence for and against the plaintiff's claim is judged to be equally strong, the court should find in favour of the defendant. As it is conventionally put, it is the plaintiff who bears the *burden of proof*.[6] The term 'burden of proof' is used in a number of subtly different ways, however. Sometimes it refers to a duty, on one party, to prove their claim to the required standard in order to win the case—this is sometimes referred to as the 'burden of persuasion' or the 'legal burden of proof'. In this sense, the burden of proof doesn't change during a civil trial and is always borne by the plaintiff. Other times, to say that a party bears the burden of proof is to say that the party is at immediate risk of losing the case unless they are able to produce further evidence—this is sometimes referred to as the 'tactical burden of proof' (Broun et al., 1984: §336; Williams, 2003: section 2). In this sense, the plaintiff may bear the burden of proof at the *beginning* of a civil trial, but it is something that can change hands any number of times as the trial progresses, and evidence is presented by each of the parties. This is how I will use the

several essential elements to a plaintiff's claim which are not conceded by the defendant. In a fraud case, for instance, a plaintiff's claim may be regarded as having no fewer than six essential elements: (i) That the defendant made a representation to the plaintiff, (ii) that the representation was false, (iii) that the representation was known by the defendant to be false when it was made, (iv) that the plaintiff relied on the representation and was deceived by it, (v) that the plaintiff acted with ordinary prudence in relying upon the representation and (vi) that the false representation was the proximate cause of injury to the plaintiff—any number of which may be disputed by the defendant. In a case that does involve multiple disputed essential elements, the legal practice is to apply the civil standard of proof separately to each element—so a plaintiff should succeed just in case each element has been proved to the civil standard (see for instance Allen and Jehl, 2003: 900). This practice arguably rests on the assumption that the civil standard of proof will be met by a conjunction whenever it is met by each individual conjunct. The 50%+ standard, however, has no such property. Just because the total evidence makes P more than 50% probable and Q more than 50% probable, it does not follow that the total evidence makes $P \wedge Q$ more than 50% probable. The probability of a conjunction will, in general, be lower than the probability of either conjunct. This 'conjunction paradox' constitutes another significant objection to the probabilistic interpretation of the civil standard of proof—independent of the objection pursued in the main text. I won't discuss this in detail here—though I return to it briefly in n. 20 (for discussion see Allen, 1986, 2008; Allen and Jehl, 2003; Allen and Pardo, 2019; Spottswood, 2016; Schwartz and Sober, 2017).

6. Some exceptions to this rule are worth noting. In product liability cases in the United States, it is the defendant who bears the initial burden of proof—a practice partly justified on the grounds that the producer (defendant) will have access to far more of the evidence relevant to determining whether a product had a defect at the point of manufacture, and whether this is due to negligence (see Beck-Dudley, 1992; *Anderson* v *Somberg* 67 N.J. 291, 338 A.2d 1 [1975]). Under English defamation law, the plaintiff in a libel case is required only to prove that statements made by the defendant have caused harm and not that the statements are false. If the defendant wishes to dispute the falsity of the statements, it falls upon them to prove their truth—a practice that is sometimes thought to amount to an effective reversal of the burden of proof in such cases (for discussion see Vick and Macpherson, 1997: particularly section III).

term here.[7] If the plaintiff produces evidence in support of their claim, the burden may be shifted to the defendant. If the defendant produces evidence that counteracts this, the burden may shift back to the plaintiff and so on. Whichever party is left with the burden of proof, once all evidence has been exhausted, should lose the case.[8]

If the plaintiff in the Blue-Bus case calls an eyewitness who testifies that the bus involved was a Blue-Bus bus, the burden of proof is shifted to the defendant. There are various kinds of evidence that the company could produce which would serve to shift the burden back. The company could, for instance, call their own eyewitness who testifies that the bus involved was a Red-Bus bus, or the company could demonstrate that, given the lighting conditions that prevailed at the time of the incident, Blue-Bus and Red-Bus buses could not be visually distinguished etc. If the company is unable to produce any burden-shifting evidence, then the court should find in favour of the plaintiff.

One might be tempted to offer a probabilistic interpretation of the exchange of the burden of proof in civil trials: At the beginning of a trial the burden lies with the plaintiff, and the plaintiff's claim is regarded as being just as likely true as false. If the plaintiff produces evidence that increases the probability of their claim—raises its probability above 50%—the burden is shifted to the defendant. If the defendant produces evidence that lowers the probability to 50% or less, the burden is shifted back to the plaintiff and so on. At any point, if the probability of the plaintiff's claim is greater than 50%, the burden of proof lies with the defendant, and if the probability of the plaintiff's claim is 50% or less, the burden of proof lies with the plaintiff.

This is an obvious extension of the probabilistic interpretation of the civil standard of proof, and shares its appeal—but also its shortcomings. If the plaintiff in the Blue-Bus case offers statistical evidence to the effect that 95% of the buses in the town are Blue-Bus buses and 5% are Red-Bus buses, then this does make it more than 50% probable that the bus involved was a Blue-Bus bus. As we have seen, however, this evidence does not appear to succeed in shifting the burden of proof to the defendant. Even if the company has no evidence to offer, the court should find in their favour. While probabilistically strong, the statistical evidence is not *burden-shifting* for the plaintiff.

Although the plaintiff has the disadvantage of bearing the initial burden of proof, the conventional view, as noted, is that plaintiff and defendant should otherwise be treated as equally as possible. Call the following the *principle of equality*:

> The plaintiff and defendant in a civil trial are to be treated equally in all respects, other than the allocation of the initial burden of proof.

7. Another related notion is the 'burden of production' borne by a party who, if unable to produce further evidence, is at risk of a directed verdict against them. The burden of production is an artefact of the set-up of civil trials in certain jurisdictions—in particular, the fact that the trial judge may direct a verdict in favour of one or other party if the case in their favour is deemed to be so strong that no reasonable jury could find otherwise. Like the tactical burden of proof, the burden of production can be shifted from one party to another—but meeting the burden does not automatically imply that it is shifted to the opposing party. It is quite possible that neither party bears the burden of production—precisely the circumstance in which a case is submitted to a jury (for discussion, see Park et al., 2018: ch. 2).
8. As I mentioned in n. 5, in many civil cases a plaintiff's claim can be broken down into several distinct elements which are disputed by the defendant. Each one of these elements may be associated with a distinct burden of proof, borne by whichever party risks losing, on that particular point, unless they are able to produce further evidence. In the examples considered in the main text, as noted, the plaintiff's claim involves but a single disputed element. Another complication that doesn't arise in the chosen examples is the possibility of affirmative defences—additional considerations which may serve to excuse a defendant from liability, even if all elements of a plaintiff's claim have been conceded. For instance, a defendant may accept that their negligence caused harm to a plaintiff, but argue that there was contributory negligence on the plaintiff's part (Broun et al., 1984: §337; Williams, 2003: section 3). If a defendant does opt for an affirmative defence strategy, they bear the initial burden of proving that the excusing conditions are met. In general, there may be any number of distinct burdens of proof 'in play' during a civil trial, with their movements providing one sort of representation of the changing epistemic fortunes of the parties as the trial progresses.

Amongst other things, this principle entails that it should be no *easier* for a defendant to shift the burden of proof than a plaintiff, except in ways that are necessitated by the fact that the plaintiff bears the initial burden.

The allocation of the initial burden of proof to the plaintiff is often justified on the grounds that it is the plaintiff who initiates a civil action or seeks to change the status quo (see Broun et al., 1984: §336–337; Williams, 2003: section 3; for discussion, see Nance, 1994: section IIB). The otherwise equal treatment of plaintiff and defendant is often justified on the grounds that, once an action has been initiated, the *stakes* might be regarded as equivalent for the two parties. Put differently, the two kinds of error that can be made in a civil trial—an erroneous finding in favour of the plaintiff and an erroneous finding in favour of the defendant—might be regarded as being equally costly (see, for instance, Allen, 2014: 199–200: Allen and Pardo, 2019: 9–10; Ball, 1961: 815–816; Brook, 1985: 297; Kitai, 2003: section II; *In re Winship* 397 U.S 358 [1970] at 371; for discussion, see Nance, 2016: section 2.2.1). Suppose a plaintiff sues a defendant for £100,000. An erroneous pro-plaintiff decision will unjustly deprive the defendant of £100,000 while an erroneous pro-defendant decision will unjustly deprive the plaintiff of £100,000. On one level, the costs are exactly the same.[9] In a criminal trial, in contrast, a wrongful conviction is generally regarded as a far more serious error than a wrongful acquittal, which is one reason why the rules of criminal procedure are set up in such a way as to strongly favour defendants.[10]

The principle of equality might also be justified on contractualist, rather than consequentialist, grounds. From behind a veil of ignorance, not knowing whether we are more likely to assume the role of plaintiff or defendant, it would be rational to seek rules of civil procedure that, as far as possible, ensure the equal treatment of both parties. A civil trial can be thought of as a means of adjudicating a *dispute*—and if one is trying to select a method of adjudication, without knowing which side of the dispute one will be on, it is rational to opt for a method that gives both parties equal opportunity to have the dispute resolved in their favour.[11]

I won't elaborate on these lines of thought here. My aim is not to offer a detailed defence of the principle of equality. At the very least, the principle should be afforded a default status, and it would be for a denier to explain just why one or other of the parties in a civil trial should be entitled to preferential treatment.[12] My aim, in the next two sections, is to explore where the principle of equality leads us, when combined with our reluctance to base a pro-plaintiff decision on evidence that is purely statistical in nature.

9. In n. 2 I mentioned that certain civil cases in the United States may be decided according to the more demanding 'clear and convincing evidence' standard. In these cases, the higher standard of proof, and consequent suspension of the equal treatment of plaintiff and defendant, is often justified on the grounds that the nature of the plaintiff's claim, and of the remedy sought, is such as to make an erroneous pro-plaintiff decision more costly (see Allen, 2014: 204–205).
10. In addition, it is sometimes claimed that the favourable treatment of the defendant in a criminal trial serves to redress an imbalance between the means and resources available to the state and those available to an individual. On this way of thinking, a defendant must be afforded every advantage in order to counteract the power ranged against them (Allen, 1931). In any particular civil trial, the resources that the plaintiff and defendant have at their disposal may of course be highly unequal, but we would not expect there to be any systemic inequality favouring one or other party. When we imagine civil trials, there may be some temptation to picture a resource-poor individual plaintiff taking on a resource-rich corporate defendant—but statistics indicate that the reverse situation is just as, if not more, common (Spottswood, 2016: 288).
11. This method for justifying rules of civil procedure was implemented, in a laboratory setting, by Thibaut et al. (1974). Subjects were told that they would take part in a hypothetical legal dispute and, given a number of background facts, were asked to choose a method of adjudication, before being told which side of the dispute they would be assigned. The primary aim of the study was to investigate whether subjects, under 'veil of ignorance' conditions, would exhibit a preference for 'adversarial' or 'inquisitorial' models—though something like the principle of equality was arguably implicit in every model presented to the subjects.
12. The principle of equality would appear to be violated in many civil or Roman law jurisdictions which, as mentioned in n. 1, officially operate with higher standards of proof for civil trials. This may suggest a certain limitation in the scope of the argument to be offered. For discussion, and criticism, of the Roman law approach to the civil standard of proof see Clermont and Sherwin (2002).

Statistical evidence and the principle of equality

Suppose, once again, that all of the buses in a town are either Blue-Bus buses or Red-Bus buses, and that a bus one day causes damage on a street. Suppose, in this case, that a civil action is brought against the *Red-Bus* company on the strength of eyewitness testimony to the effect that the bus involved was a Red-Bus bus. Suppose that the company then responds by producing evidence to the effect that 95% of the buses in the town are Blue-Bus buses and 5% are Red-Bus buses. Should the Red-Bus company be found liable for the damage?

Compare the following three cases:

	Plaintiff's evidence	**Defendant's evidence**	**Verdict for** ...
Blue-Bus 1	95% of the buses in the town are Blue-Bus buses and 5% are Red-Bus buses.	None.	Defendant
Blue-Bus 2	Eyewitness testifies that the bus involved was a Blue-Bus bus.	None.	Plaintiff
Red-Bus	Eyewitness testifies that the bus involved was a Red-Bus bus.	95% of the buses in the town are Blue-Bus buses and 5% are Red-Bus buses.	???

If we find in favour of the defendant in **Blue-Bus 1**, and in favour of the plaintiff in **Blue-Bus 2** then, given the principle of equality, I will argue that we are *committed* to finding in favour of the plaintiff in **Red-Bus**. In rough outline, the argument is this: If the testimonial evidence shifts the burden of proof from plaintiff to defendant in **Blue-Bus 2**, then it should shift the burden of proof from plaintiff to defendant in **Red-Bus**. If the statistical evidence does not shift the burden of proof from plaintiff to defendant in **Blue-Bus 1**, then the principle of equality demands that it should not shift the burden of proof from defendant to plaintiff in **Red-Bus**. If we accept the principle of equality, the defendant in **Red-Bus** is left with an undischarged burden of proof, and the court should find in favour of the plaintiff. Put simply, if a plaintiff cannot use statistical evidence to prove liability, then equality demands that a defendant cannot use statistical evidence to *avoid* liability.

In putting forward this argument, I don't mean to endorse the general claim that any piece of evidence which is burden-shifting for a defendant must also be burden-shifting for a plaintiff. This is clearly not true—and is not required by the principle of equality. If the plaintiff in **Red-Bus** produces an eyewitness who testifies that the bus involved was a Red-Bus bus and the company responds by demonstrating that, given the lighting conditions at the time of the incident, Blue-Bus buses and Red-Bus buses could not be distinguished by sight then, as discussed above, this should succeed in shifting the burden of proof back to the plaintiff. Clearly, though, this evidence would be of no use to the plaintiff in **Blue-Bus 1**—it provides no support for the proposition that the bus involved was a Blue-Bus bus. The only reason that this evidence would be effective in the hands of the defendant in **Red-Bus** is that it effectively *neutralizes* the testimonial evidence offered by the plaintiff, robbing it of its force and returning us to the starting position in which the plaintiff bore the burden of proof. The fact that a defendant can use such evidence to shift the burden, even though the plaintiff cannot, is no violation of equality—it is a necessary consequence of the fact that the initial burden lies with the plaintiff.

The statistical evidence, however, is not like this 'neutralizing' evidence. If the defendant in **Red-Bus** is able to use this evidence to shift the burden of proof, then this will be due to its support for the proposition that the bus involved was a Blue-Bus bus. Since the support is the same when this evidence is deployed by the plaintiff in **Blue-Bus 1**, it should suffice to shift the initial burden of proof. To treat this evidence as burden-shifting in the hands of the defendant, but not in the hands of the plaintiff, would be a genuine violation of equality. Such a policy would give the defendant an advantage that is in no way required by the initial allocation of the burden of proof.

Here is another, more general, way of putting the point: At the beginning of a civil trial, a plaintiff has only one option when it comes to shifting the burden of proof—to provide evidence that supports their

claim P. If the plaintiff succeeds in this, the defendant has *two* options when it comes to shifting the burden back—either (i) produce evidence that supports ∼P or (ii) produce evidence that neutralizes the evidence offered by the plaintiff. The distinction between these two strategies is similar to the distinction that epistemologists have drawn between 'overriding' and 'undercutting' defeaters (see, for instance, Pollock, 1974: 42–43)—one might say that the defendant has the option of providing either an overriding or undercutting defeater. The availability of option (ii) simply reflects the fact that it is the plaintiff who bears the initial burden of proof and is required to 'make the first move'. But if the defendant opts for (i) and produces evidence in support of ∼P that succeeds in shifting the burden of proof, then equality demands that the same evidence, if used by a *plaintiff* arguing for ∼P, should succeed in shifting the initial burden of proof. If not, plaintiffs are being hampered in a way that is additional to their bearing the initial burden.

If we compare a system which mandates a pro-defendant decision in **Blue-Bus 1** and a pro-plaintiff decision in **Red-Bus** with a system that mandates a pro-defendant decision in both cases, it is clear that the former system treats plaintiffs and defendants more equally than the latter. If we were forced to choose a system from behind a veil of ignorance—without knowing whether we will be cast as plaintiff or defendant—it would be rational to choose the former.

The 50%+ standard is too strong

Let R be the proposition that the bus involved was a Red-Bus bus, B be the proposition that the bus involved was a Blue-Bus bus and T be the proposition that the eyewitness testified that the bus involved was a Red-Bus bus. Let S be the statistical evidence that 95% of the buses in the town are Blue-Bus buses and 5% are Red-Bus buses. I have argued that this statistical evidence cannot be used by the defendant in **Red-Bus** to shift the burden of proof. But the proportion of Red-Bus buses in the town is clearly relevant to determining the *probability* that the bus involved was a Red-Bus bus. Given just the statistical evidence, the probability that the bus involved was a Red-Bus bus is 5%: $\Pr(R \mid S) = 0.05$. What then is the final probability that the bus involved was a Red-Bus bus, once the testimonial *and* statistical evidence are taken into account—what is the value of $\Pr(R \mid T \wedge S)$?

In order to calculate this figure, we need to make some estimate of how reliable the eyewitness is at identifying Blue-Bus and Red-Bus buses. Given the viewing conditions at the time of the incident, suppose that, when confronted with a Blue-Bus bus, the eyewitness has a 76% chance of correctly identifying it as a Blue-Bus bus, a 16% chance of failing to make an identification and an 8% chance of incorrectly identifying it as a Red-Bus bus—that is, suppose there is an 8% chance that the eyewitness lies or hallucinates or has a false memory etc. Suppose the situation for Red-Bus buses is symmetrical: The eyewitness has a 76% chance of correctly identifying a Red-Bus bus, a 16% chance of failing to identify a Red-Bus bus and an 8% chance of incorrectly identifying a Red-Bus bus as a Blue-Bus bus. These stipulations give us our two 'Bayesian likelihoods'—the probabilities that the eyewitness would testify as he did, on the hypothesis that the bus was a Blue-Bus bus and on the hypothesis that it was a Red-Bus bus: $\Pr(T \mid B \wedge S) = 0.08$ and $\Pr(T \mid R \wedge S) = 0.76$. According to the odds form of Bayes' Theorem, the ratio of the final probabilities of B and R is equal to the ratio of the Bayesian likelihoods multiplied by the ratio of the prior probabilities of B and R:

$$\frac{\Pr(B \mid T \wedge S)}{\Pr(R \mid T \wedge S)} = \frac{\Pr(T \mid B \wedge S)}{\Pr(T \mid R \wedge S)} \times \frac{\Pr(B \mid S)}{\Pr(R \mid S)}$$

$$= \frac{0.08}{0.76} \times \frac{0.95}{0.05}$$

$$= \frac{2}{19} \times 19$$

$$= 2$$

Given the testimonial and statistical evidence, it is still *twice as likely* that the bus involved was a Blue-Bus bus than a Red-Bus bus. That is, the final probability that the bus involved was a Red-Bus bus is only 33⅓%. If my argument in the previous section holds, then what it appears to show is that the 50%+ standard is too strong—the court should find in favour of the plaintiff, even though, given the total evidence, the plaintiff's claim is only 33⅓% likely to be true.[13]

One might immediately question my stipulations about the reliability of the eyewitness—why set $Pr(T \mid B \wedge S)$ to 0.08 and $Pr(T \mid R \wedge S)$ to 0.76? If the former figure were lowered and/or the latter figure were raised, the final probability of R would increase. Do these figures represent a reasonable estimate of the reliability of an eyewitness? At present, the **Red-Bus** example is somewhat underdescribed—and we are lacking much of the information that would typically be available to a fact finder in a civil trial. Imagine the incident took place in the early evening just as the light was beginning to fade. Imagine that the eyewitness had only a fleeting glimpse of the incident and was at a moderate distance when it occurred. While the terms 'Blue-Bus bus' and 'Red-Bus bus' might suggest buses that are uniformly blue and red, imagine instead that the buses are closer in appearance than this—distinguished only by the colour of a stripe along the side say. Moderately disobliging circumstances such as these are not at all unusual in cases of eyewitness testimony, and should not prevent the testimony from shifting the burden of proof to the defendant—but they would oblige us to be more conservative in estimating the reliability of the eyewitness.

Alternately, instead of adjusting the example to better fit the proposed figures, we could adjust the figures (within certain limits). As the above equation makes clear, the final probability of R will remain lower than 50% provided the ratio of $Pr(T \mid B \wedge S)$ to $Pr(T \mid R \wedge S)$ is greater than 1 in 19. We could, for instance, stipulate that the eyewitness has only a 5% chance of incorrectly identifying a Blue-Bus bus and a 90% chance of correctly identifying a Red-Bus bus—making the eyewitness very reliable indeed—and the case would retain the required structure (with these stipulations, the probability of the plaintiff's claim would work out to around 48.6%). The statistical evidence in this case is so heavily weighted in favour of B as to overwhelm contrary testimony even from a highly reliable source.

The base rate fallacy

I have argued that, in the **Red-Bus** case, the company ought to be found liable, even though the probability that the bus involved was a Red-Bus bus, given the total evidence, is lower than 50%. One might object that any fact finder who returned this verdict would be guilty of committing the *base rate fallacy*. The base rate fallacy is an error of probabilistic reasoning in which the reasoner overestimates the probability of a proposition as a result of ignoring or downplaying 'base rate' information in favour of 'individuating' or 'case-specific' information. Suppose 1 in every 100 people in a population carries a certain disease (base rate information). Suppose a diagnostic test exists which is sure to yield a positive result if one carries the disease and is 95% likely to yield a negative result if one does not carry the disease. Suppose a person is tested and the result is positive (individuating information). What is the probability that this person carries the disease? Many would respond with an estimate of 95%, or an estimate that is, in any case, very high. The correct answer can be calculated as above. If we let C be the

13. The claim that the 50%+ standard is too strong is a consequence of some alternative interpretations of the preponderance of evidence standard that have been advanced in the literature. Cheng (2013) has defended an interpretation on which the standard is met just when a plaintiff's story or narrative is more probable, given the evidence, than the alternative story offered by the defendant. Since these two stories need not be exhaustive, this standard can, in principle, be met even if the probability of the plaintiff's story is less than 50%. The considerations that I have offered here, however, would appear to require an even more radical departure from the 50%+ standard. **Red-Bus** is not only a case in which the plaintiff's story is less probable than 50%, but also a case in which the plaintiff's story is less probable than the alternative story offered by the defendant. As I will explore in the final section, the conclusions reached here may be compatible with a view on which civil adjudication is a matter of comparing the plausibility of competing narratives—but not if relative plausibility is understood in purely probabilistic terms.

proposition that the person carries the disease, P be the proposition that the test was positive and I be the evidence concerning the incidence of the disease in the general population, we have it that:

$$\frac{\Pr(\sim C \mid P \wedge I)}{\Pr(C \mid P \wedge I)} = \frac{\Pr(P \mid \sim C \wedge I)}{\Pr(P \mid C \wedge I)} \times \frac{\Pr(\sim C \mid I)}{\Pr(C \mid I)}$$

$$= \frac{0.05}{1} \times \frac{0.99}{0.01}$$

$$= 0.05 \times 99$$

$$= 4.95$$

Given these figures, it turns out that it is almost five times as likely that the person does *not* carry the disease—the probability that the person is a carrier is only about 17%.[14] To put this reasoning more intuitively, given what we know about the prevalence of the disease and the reliability of the test, for every 100 people tested we would expect to have one true positive and about five false positives. As a result, a person with a positive test result is much more likely to be a false positive than a true positive.

The **Red-Bus** example also fits the general pattern for triggering the base rate fallacy, with the testimonial evidence playing the role of individuating information and the statistical evidence regarding the proportion of Blue-Bus and Red-Bus buses playing the role of base rate information. In fact, one classic early study of the base rate fallacy used an example very similar to this (see Kahneman and Tversky, 1977: section II). When subjects in this study were asked to estimate the probability of a proposition, with testimonial evidence weighing in its favour and statistical evidence weighing against, they tended to respond with values that were significantly higher than the results yielded by the Bayesian calculation. There are numerous further studies—some using variants on this example—in which the same pattern of responses has been observed (see, for instance, Bar-Hillel, 1980; Hammerton, 1973; for overviews, see Barbey and Sloman, 2007; Koehler, 1996; Pennycook and Thompson, 2017; Stanovich and West, 2000).

When confronted with the evidence in **Red-Bus**, and asked to estimate the probability that the bus involved was a Red-Bus bus, many would be inclined give an erroneous answer much higher than 33⅓%. Does this raise doubts about the legitimacy of a pro-plaintiff decision in this case? The first thing to observe is that the fact finder in a civil trial is not asked to make a probability estimate, but simply to return a verdict in favour of one or other party. One might suggest that, in returning a pro-plaintiff verdict in **Red-Bus**, a fact finder would be implicitly *committed* to regarding it as likely that the bus involved was a Red-Bus bus, at which point the fallacy is implicated—but this is precisely what I have argued against in the preceding section. If this argument is successful, then a pro-plaintiff decision does *not*, in general, commit one to assigning any particular probability to the plaintiff's claim.

A number of psychologists and legal theorists have claimed that deliberation in a legal trial is not, in practice, treated as an exercise in probabilistic reasoning—rather, fact finders usually come to a decision by comparing the plausibility of competing *narratives* (Allen, 2008, 2014: section 4; Allen and Jehl, 2003; Pardo and Allen, 2008, 2019; Pennington and Hastie, 1991). On this view, the parties in a civil trial are not primarily engaged in producing evidence that impacts the probability of the plaintiff's claim—rather, their actions are better understood in terms of the construction of broader narratives as to what

14. Some commentators have denied that the correct answers to such problems can be calculated in the way suggested, and express a consequent scepticism about the existence of the base rate fallacy. For instance, Levi (1981, 1983) and Niiniluoto (1981) challenge the prior probability values that are assumed, arguing that one should not estimate probabilities based upon the kind of frequency information provided but should, rather, apply a 'principle of indifference'. This view conflicts with many of the claims made in this paper, and in the related literature—but also clashes with ordinary judgments. As a number of experiments have shown, people are perfectly willing to base probability estimates on frequency information of this kind (see, for instance, Bar-Hillel, 1980: 216; Kahneman and Tversky, 1977: 175; Wells, 1992). I won't discuss this further here.

occurred, with the plaintiff providing a narrative on which the claim is true, and the defendant providing a narrative on which the claim is false.

Whether or not this view is on the right track, it illustrates the possibility of an alternative perspective on the **Red-Bus** case—a perspective on which the probabilities no longer seem paramount. The plaintiff in **Red-Bus** is able to outline a certain story as to what took place; a Red-Bus bus caused the damage, and was observed to do so by an eyewitness who then testified to this effect. The statistical evidence that the company produces is not part of any alternative story or version of events—indeed the only alternative story that the defendant can offer is that the damage was caused by a Blue-Bus bus. The statistical evidence might make the defendant's story more likely to be true, but the story effectively leaves the eyewitness testimony *unexplained*. While the defendant could allege that the witness is lying or suffered a hallucination or is misremembering etc. with no evidence to back this up, this would be no more than baseless speculation.

One could imagine a pro-plaintiff decision justified along the following lines:

> Although the chances somewhat favour the proposition that the bus involved was not owned by the Red-Bus company, it is appropriate to find the company liable on the grounds that they could provide no adequate explanation for the eyewitness testimony against them, and were unable to offer any plausible alternative to the plaintiff's version of events.

Whether this would, in the end, be a *persuasive* rationale for the decision is something that I consider in the next section—but all that is crucial for present purposes is that it is a *coherent* rationale, and one that makes it plain that no base rate fallacy is being committed.

Gesturing towards the base rate fallacy cannot, in and of itself, provide an argument for a pro-defendant decision in **Red-Bus**. One might still insist, though, that it is only because of our proneness to the fallacy that we find a pro-plaintiff decision to be intuitively correct. At the very least, then, these intuitions are 'tainted' and ought to be regarded with suspicion. For what it's worth, I think it *is* intuitively correct that the court should find in favour of the plaintiff in **Red-Bus**—but nowhere have I appealed to this 'intuitiveness'. Only two verdicts have been put forward as intuitively correct—a pro-defendant decision in **Blue-Bus 1** and a pro-plaintiff decision in **Blue-Bus 2**. These verdicts are in line with legal practice, and neither implicates a base rate (or other) fallacy.[15] The pro-plaintiff verdict in **Red-Bus** is derived from these verdicts, using the principle of equality. That is, the claim that a court should find in favour of the plaintiff in **Red-Bus** is the conclusion of an *argument*—an argument which appeals to the principle of equality and to the claims that the court should find in favour of the defendant in **Blue-Bus 1** and the plaintiff in **Blue-Bus 2**.

Competing narratives

I turn, finally, to the question that I set aside at the outset—how *should* the civil standard of proof be interpreted? If it is true that the 50%+ standard is both too weak and too strong, then what is needed is a standard that is *wholly* non-probabilistic—in the sense that no probability threshold is either sufficient or necessary for meeting it. What might such a standard look like? While this question lies, for the most part, beyond the scope of the present paper, I will conclude by exploring two somewhat related ideas.

Consider again the claim, canvassed in the last section, that deliberation in a civil trial is largely a matter of comparing the plausibility of competing narratives. This thought lies at the heart of the *relative*

15. **Blue-Bus** 1 involves no individuating information and, as a result, is not of the right structure to elicit the base rate fallacy. Further, when presented with cases like **Blue-Bus** 1, the majority of subjects correctly assess the probability that the bus involved was a Blue-Bus bus—when the only information is base rate information, it is not neglected by subjects—though they remain unwilling to return a verdict of liability (Wells, 1992, see also Bar-Hillel, 1980: 216; Kahneman and Tversky, 1977: 175). Subjects' judgments in this case involve no error of probabilistic reasoning—they simply demonstrate a reluctance to move from a probability judgment to a pro-plaintiff verdict.

plausibility theory of legal proof defended in a number of papers by Ronald Allen and Michael Pardo (see, for instance, Allen, 1986, 1994, 2008; Allen and Pardo, 2019; Pardo, 2019; Pardo and Allen, 2008).[16] The way I will develop this approach here owes much to Allen and Pardo's work—though, as will emerge, there are some significant differences. On the relative plausibility view, at a first pass, what it means for a party to 'prove' a proposition to the civil standard is for them to advance a narrative on which the proposition is true and which is more plausible than the competing narrative offered by the opposing party. Presumably, though, fact finders need not limit themselves to the narratives that are explicitly offered by the opposing parties, and may also consider further narratives, favouring one or other party, that they themselves are able to construct (see, for instance, Pardo and Allen, 2008: 234–235). This leads to the following:

> A proposition has been proved to the civil standard just in case, given the evidence, there exists a narrative on which the proposition is true and which is more plausible than any competing narrative on which the proposition is false.

But what exactly does it mean for one narrative to be more 'plausible' than another? Allen and Pardo appear to assume that the more plausible of two narratives must also be the more *probable*—or, at any rate, that judging one narrative to be more plausible than another commits one to regarding it as more probable.[17] Given my purposes here, however, it is imperative that comparative plausibility and comparative probability be allowed, in principle, to come apart. In **Red-Bus**, if the company simply insists that the bus involved was a Blue-Bus bus *end of story*, then I am happy to concede that, given the total evidence, this is more likely to be true than the narrative offered by the plaintiff. And yet, as discussed in the previous section, this story is missing crucial elements—most importantly, it provides no explanation as to why the witness testified that the bus involved was a Red-Bus bus.

If the company were to suggest that, say, the eyewitness has a false memory or is lying in order to smear them, then these would provide the needed explanation, but would also represent ad hoc additions to the story that have no basis in the evidence. Given the evidence that is available, any narrative on which the bus involved was a Blue-Bus bus will either fail to explain the eyewitness testimony or will include ad hoc elements. That is, given the evidence, any narrative on which the bus involved was a Blue-Bus bus will either be *incomplete* or it will be *arbitrary*. In contrast, the narrative offered by the plaintiff—that the bus involved was a Red-Bus bus and was observed to be so by an eyewitness who then testified to this effect—has neither of these drawbacks.

This provides the following way of 'cashing out' the notion of plausibility in the above interpretation of the civil standard of proof:

> A proposition has been proved to the civil standard just in case, given the evidence, there exists a narrative on which the proposition is true and which is more complete/non-arbitrary than any competing narrative on which the proposition is false.

16. While Allen (1994, 2008) speaks of the relative plausibility of narratives or stories, Allen and Pardo (2019) opt for the term 'explanation' on the grounds that not all legal trials will involve parties outlining a chronological sequence of events (Allen and Pardo, 2019: n. 7). The point is well taken—but I don't think that the terms 'narrative' and 'story' need to be interpreted quite so narrowly, and I continue to use them here (and to describe what parties put forward as 'explanations' brings certain issues of its own). In any case, nothing of substance hinges on this terminological choice.
17. They write, for instance, 'The quality of an explanation serves as a proxy for likelihood: The better the explanation the more likely it is' (Allen and Pardo, 2019: n. 74), 'under certain assumptions, accuracy will be advanced to the extent that better explanations are more likely to be true than implausible explanations' (Allen and Pardo, 2019: 17) and '. . . inferring which is the better explanation is indeed about inferring what is more likely based on the evidence' (Allen and Pardo, 2019: 20). See also Allen and Pardo (2019: section IIA). As discussed in n. 13, Cheng (2013) offers a kind of relative plausibility theory ('story model' as he terms it) in which talk of 'plausibility' is bypassed altogether, and competing narratives are evaluated directly in terms of their probability—a move that he sees as a reconciliation with the probabilistic approach.

This interpretation predicts, as desired, that the court should find in favour of the plaintiff in **Red-Bus**. It is the plaintiff's narrative that is the most complete/non-arbitrary, even if the defendant's is more likely, given the evidence. This interpretation also yields the desired verdicts in **Blue-Bus 1** and **Blue-Bus 2**—that the court should find for the defendant and plaintiff respectively. The interpretation is consistent, across these cases at least, with the principle of equality. While completeness and non-arbitrariness are the features that seem crucial for evaluating the competing narratives in these three cases, it may be that there are further criteria for assessing plausibility that come into play for narratives of other kinds. If so, the above interpretation would need to be further embellished.[18]

Dale Nance (2016) presents a dilemma for the relative plausibility theory of standards of proof: If plausibility is to be understood in terms of probability, then the view is at risk of collapsing into the orthodox probabilistic interpretation. If, on the other hand, plausibility is independent of probability—is a matter of 'telling a good story' no matter how unlikely—then this is no basis for legal adjudication (Nance, 2016: section 2.3.2; see also Schwartz and Sober, 2017: section IIC2). As should be clear from the foregoing discussion, Allen and Pardo's response to this is to reject the second horn of the dilemma and to tie plausibility and probability closer together, while attempting to resist the charge that the relative plausibility theory would then reduce to the 50%+ interpretation (Allen and Pardo, 2019: section IIA).[19]

My response is different. In setting up this dilemma, Nance appears to assume that, if plausibility were independent of probability, it would have to consist in features that are entirely *disconnected* from the evidence—he mentions aesthetic qualities like how dramatic or engrossing a story is (Nance, 2016: 81–82). While it is obvious that these features should not serve as criteria for legal proof, the aspects of plausibility that I have highlighted here are not at all like this—and clearly *do* concern the way in which a narrative relates to the available evidence. The extent to which a narrative is complete/non-arbitrary is very much determined by the evidence presented—and yet, as demonstrated, these features are logically independent of probability. The above interpretation of the civil standard of proof could perfectly well be squared with the words 'preponderance of evidence'. The phrase merely suggests that a proposition should count as proved when the evidence in its favour is stronger than the evidence against—but it says nothing as to how the relevant notion of 'strength' is to be measured (be it probabilistically or in some other way).

In previous work I have described a non-probabilistic support relation—termed *normic support*—that a body of evidence can bear to a proposition (Smith, 2010, 2016). In **Blue-Bus 2**, when the eyewitness testifies that the bus involved was a Blue-Bus bus, this obviously serves to raise the probability that the bus involved was a Blue-Bus bus. But this is not its only effect—testimony does more than just 'stack the odds' in favour of its content. If it turned out that the bus involved was not a Blue-Bus bus, even though the witness testified that it was, then some kind of *explanation* would be needed. Possible explanations have already been canvassed above—perhaps the eyewitness suffered a colour hallucination, perhaps his

18. Completeness and non-arbitrariness seem to correspond to two of the criteria for plausibility that Allen and Pardo list—namely an absence of 'gaps' and an absence of 'unlikely assumptions'—but they also mention consistency, coherence, simplicity, and fit with background knowledge (Allen and Pardo, 2019: 16). Consistency—if it simply means logical consistency—should be a minimal condition necessary for a narrative to be considered a candidate for plausibility. 'Coherence', 'simplicity' and 'fit with background knowledge' can of course be understood in different ways—and Allen and Pardo don't elaborate at length. I am unsure of the extent to which these factors can be varied independently of the two features that I have highlighted, casting some doubt on whether they need to be included as separate items on the list—but I won't explore this topic further here.

19. I have doubts as to whether their attempt is successful. Here is one way to present the problem: If (i) a proposition and its negation both count as 'narratives' and (ii) greater-or-equal plausibility entails greater-or-equal probability, then the relative plausibility interpretation of the civil standard of proof, as stated here, will indeed be equivalent to the 50%+ interpretation—the question of whether there is a narrative on which a proposition P is true and which is more plausible than any competing narrative on which P is false will reduce to the question of whether P is more probable than $\sim$P—i.e. whether the probability of P is greater than 50%. If Allen and Pardo accept (ii) (as they appear to) then they are required to reject (i) and to place further constraints on what can count as a legitimate narrative—but I find no clear rationale in their discussion for doing this. I won't pursue this further.

memory of the incident was distorted by subsequent misinformation, perhaps he is simply lying in order to smear the company etc. Whatever the truth, there has to be some explanation or other—it can't 'just so happen' that the bus wasn't a Blue-Bus bus, even though the eyewitness testified that it was.

Say that a body of evidence E provides *normic support* for a proposition P just in case the situation in which E is true and P is false is less normal, in the sense of requiring more explanation, than the situation in which E and P are both true. When the eyewitness testifies that the bus involved was a Blue-Bus bus, this provides both probabilistic support and normic support for the proposition that it was. While **Blue-Bus 2** is a case in which probabilistic and normic support align with one another, there are other cases in which they come apart. In **Blue-Bus 1**, for instance, the evidence provides probabilistic support for the proposition that the bus involved was a Blue-Bus bus, but fails to provide normic support. Even if 95% of the buses in the town are Blue-Bus buses it *could* 'just so happen' that the bus involved was one of the remaining 5% with no further explanation needed. The effect of this evidence is precisely to *stack the odds* in favour of the proposition that the bus involved was a Blue-Bus bus.

In **Red-Bus** the probabilistic and normic support relations come apart in a yet more radical way—in that they stand in direct *conflict*. While the evidence provides probabilistic support for the proposition that the bus involved was a Blue-Bus bus, it provides normic support for the proposition that the bus involved was a Red-Bus bus. If the bus involved really was a Blue-Bus bus, in spite of the eyewitness testimony, then there would have to be some explanation for this. The statistical evidence offered by the company might raise the probability that the eyewitness testimony is false, but does nothing to remove the need for explanation in the event that it is.

The fact that the evidence in this case normically supports the proposition that the bus involved was a Red-Bus bus is, arguably, the very reason that the company is unable to formulate a complete and non-arbitrary narrative on which this proposition is false. The testimony generates the need for explanation in the event that the bus involved was not a Red-Bus bus. If the company fails to provide the needed explanation, their narrative will be incomplete. If, on the other hand, they do provide an explanation—the eyewitness is lying or misremembering, say—their narrative will be arbitrary. Things would be different of course if the company produced *evidence* to support such allegations—that the witness had motive and willingness to lie, or that Blue-Bus buses and Red-Bus buses could not have been distinguished given the lighting conditions etc. But, in this case, the proposition that the bus involved was a Red-Bus bus would no longer be normically supported by the total evidence provided at the trial. Unlike the statistical evidence, this new evidence *would* remove the need for explanation in the event that the bus involved was not a Red-Bus bus.

It may be that we can defend a more general thesis regarding the way in which normic support serves to constrain the completeness/arbitrariness of possible narratives. If our total evidence E normically supports a proposition P, then it will not be possible for us to tell a complete and non-arbitrary narrative on which P is false. If E normically supports P then, given E, an explanation is needed in the event that P is false. Any narrative on which P is false will either neglect to provide such an explanation—in which case it will suffer from incompleteness—or it will provide an explanation that is purely speculative—in which case it will suffer from arbitrariness. If a suitable explanation of P's falsity were backed up by evidence included in E, then it would be wrong to describe E as normically supporting P, contrary to stipulation. If this is right, then the above interpretation of the civil standard of proof may converge with the following:

> A proposition has been proved to the civil standard just in case it is normically supported by the evidence.[20]

20. One advantage of this approach is that it appears to offer a straightforward solution to the conjunction paradox mentioned in n. 5. Suppose propositions P and Q are each normically supported by a body of evidence. From the definition of normic support, if P is false then, given the evidence, some special explanation would be needed, and if Q is false then, given the evidence, some special explanation would be needed. Consider now the conjunction $P \wedge Q$. The only way that $P \wedge Q$ could be false is if either P is false or Q is false and, as just noted, these are both circumstances that would require special explanation. It follows that if $P \wedge Q$ is false then, given the evidence, some special explanation would be needed, which is just to say that the evidence

I won't further explore the relative plausibility or normic interpretations of the civil standard of proof. Whatever one ultimately makes of these interpretations, the main conclusion of this paper will stand: There are circumstances in which a defendant should be found liable, even though the evidence presented makes it *less* than 50% likely that the plaintiff's claim is true. For this conclusion, no interpretation of the civil standard of proof is needed—only the following claims: (1) That a defendant should never be found liable on the basis of naked statistical evidence, (2) that a defendant may be found liable on the basis of testimony and (3) that the plaintiff and defendant in a civil trial should be treated equally (in so far as is consistent with the allocation of the initial burden of proof). Where these alternative interpretations have value is in providing a possible context or backdrop for this conclusion—which may otherwise seem rather stark. Whether these interpretations are ultimately defensible is a topic for another occasion.

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References

Allen C (1931) The presumption of innocence. In: *Legal Duties and Other Essays in Jurisprudence*. Oxford: Clarendon Press, 253–294.

Allen R (1986) A reconceptualization of civil trials. *Boston University Law Review* 66(3): 401–437.

Allen R (1994) Factual ambiguity and a theory of evidence. *Northwestern University Law Review* 88(2): 604–640.

Allen R (2008) Explanationism all the way down. *Episteme* 5(3): 320–328.

Allen R and Jehl S (2003) Burdens of persuasion in civil cases: Algorithms vs explanations. *Michigan State Law Review* 893.

Allen R (2014) Burdens of proof. *Law, Probability and Risk* 13(3–4): 195–219.

Allen R and Pardo M (2019) Relative plausibility and its critics. *International Journal of Evidence and Proof* 23(1–2): 5–59.

normically supports P ∧ Q. If this is right then, on the normic interpretation, the civil standard of proof will be met by a conjunction whenever it is met by each individual conjunct. It is often claimed that the relative plausibility theory offers a solution to the conjunction problem. While I agree that the theory has the potential to solve the problem, I don't think that the solution is quite as immediate as some relative plausibility theorists contend, and will very much depend on how certain crucial details are filled in (see Schwartz and Sober, 2017: section IIC).

Allensworth R (2009) Prediction markets and law: A sceptical account. *Harvard Law Review* 122: 1217–1229.

Ball V (1961) The moment of truth: Probability theory and the standards of proof. *Vanderbilt Law Review* 14: 807–830.

Bar-Hillel M (1980) The base rate fallacy in probability judgments. *Acta Psychologica* 44(3): 211–233.

Beck-Dudley C (1982) Shifting the burden of proof in a products liability case. *Idaho Law Review* 18: 539–559.

Brook J (1985) The use of statistical evidence of identification in civil litigation. *St Louis University Law Journal* 29: 293–352.

Broun K, Cleary E, Dix G, et al. (1984) *McCormick on Evidence, 3e*. St Paul, MI: West.

Cheng E (2013) Reconceptualizing the burden of proof. *Yale Law Journal* 122(5): 1254–1279.

Clermont K and Sherwin E. (2002) A comparative view of standards of proof. *The American Journal of Comparative Law*, 50: 243–275

Dennis I. (2002) *The Law of Evidence*. London: Sweet and Maxwell.

Elliott D and Phipson S *Elliott and Phipson Manual of the Law of Evidence* London: Sweet and Maxwell.

Enoch D, Fisher T and Spectre L (2012) Statistical evidence, sensitivity and the legal value of knowledge. *Philosophy and Public Affairs* 40(3): 197–224.

Gabriel P (2013) Burden of proof and standard of proof in civil litigation. *Singapore Academy of Law Journal* 25: 130–181.

Gardiner G (2018) Legal burdens of proof and statistical evidence. In: Coady D and Chase J eds. *Routledge Handbook of Applied Epistemology*. New York: Routledge, 179–195.

Hammerton M (1973) A case of radical probability estimation. *Journal of Experimental Psychology* 101(2): 242–254.

Hazelhorst M (2017) *Free Movement of Civil Judgments in the European Union and the Right to a Fair Trial*. Dordrecht: Springer.

Koehler J (1996) The base rate fallacy reconsidered: Descriptive, normative and methodological challenges. *Behavioural and Brain Sciences* 19(1): 1–17.

Laudan L. (2006) *Truth, Error and The Criminal Law*. Cambridge: Cambridge University Press.

Levi I (1981) Should Bayesians sometimes neglect base rates? *Behavioural and Brain Sciences* 4(3): 342–343.

Levi I (1983) Who commits the base rate fallacy? *Behavioural and Brain Sciences* 6(3): 502–506.

Kahneman D and Tversky A (1977) Causal thinking in judgment under uncertainty. In: Butts R and Hintikka J (eds). *Basic Problems in Methodology and Linguistics*. Dordrecht: Reidel, 167–190.

Kaye D (1982) The limits of the preponderance of the evidence standard: Justifiably naked statistical evidence and multiple causation. *American Bar Foundation Research Journal* 7(2): 487–516.

Keane A (1996) *The Modern Law of Evidence, 4e*. London: Butterworths.

Kitai R (2003) Protecting the guilty. *Buffalo Criminal Law Review* 6(2): 1163–1187.

Koehler J (2002) When do courts think that base rate statistics are relevant? *Jurimetrics* 42(4): 373–402.

Nance D (1994) Civility and the burden of proof. *Harvard Journal of Law and Public Policy* 17(3): 647–690.

Nance D (2016) *The Burdens of Proof*. Cambridge: Cambridge University Press.

Niiniluoto I (1981) L J Cohen vs Bayesianism. *Behavioural and Brain Sciences* 4(3): 349.

O'Malley K, Grenig J and Lee W (2006) *Federal Jury Practice and Instructions, 6e*. Eagan, MI: West Academic Publishing.

Pardo M and Allen R (2008) Juridical proof and best explanation. *Law and Philosophy* 27(3): 223–268.
Pardo M (2019) The nature and purpose of evidence theory. *Vanderbilt Law Review* 66(2): 547–613.
Park R, Leonard D, Orenstein A, et al. (2018) *Evidence Law, A Student's Guide to the Law of Evidence as Applied in American Trials*. Eagan, MI: West Academic Publishing.
Pennington N and Hastie R (1991) A cognitive theory of juror decision making: The story model. *Cardozo Law Review* 13: 519–557.
Pennycook G and Thompson V (2017) Base-rate neglect. In: Pohl R (ed.) *Cognitive Illusions*, 2e. New York: Routledge, 44–61.
Pollock J (1974) *Knowledge and Justification*. Princeton, NJ: Princeton University Press.
Redmayne M (2006) The structure of evidence law. *Oxford Journal of Legal Studies* 26(4): 805–822.
Redmayne M (2008) Exploring the proof paradoxes. *Legal Theory* 14: 281–309.
Schwartz D and Sober E (2017) The conjunction problem and the logic of jury findings. *William and Mary Law Review* 59(2): 619–692.
Smith M (2010) What else justification could be. *Noûs* 44(1): 10–31.
Smith M (2016) *Between Probability and Certainty: What Justifies Belief*. Oxford: Oxford University Press.
Smith M (2018) When does evidence suffice for conviction? *Mind* 127(508): 1193–1218.
Spottswood M (2016) Unraveling the conjunction paradox. *Law, Probability and Risk* 15: 259–296.
Stanovich K and West R. Individual differences in reasoning: Implications for the rationality debate? *Behavioural and Brain Sciences* 23(5): 645–665.
Stein A (2005) *Foundations of Evidence Law*. Oxford: Oxford University Press.
Thibaut J, Walker L, LaTour S, et al. (1974) Procedural justice as fairness. *Stanford Law Review* 26(6): 1271–1289.
Thomson J (1986) Liability and individualized evidence. *Law and Contemporary Problems* 49: 199–219.
Vick D and Macpherson L (1997) An opportunity lost: The United Kingdom's failed reform of defamation law. *Federal Communications Law Journal* 49(3): 621–653.
Wells G (1992) Naked statistical evidence of liability: Is subjective probability enough? *Journal of Personality and Social Psychology* 62(5), 739–752.
Williams C (2003) Burdens and standards in civil litigation. *Sydney Law Review* 25(2): 165–188.
Winter R (1971) The jury and the risk of nonpersuasion. *Law and Society Review* 5(3): 335–344.